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COMMUNICATIONS

CLINICAL OBSERVATIONS AND DEDUCTIONS IN THE THERAPEUTIC USE OF SULPHONAMIDE AND ITS DERIVATIVES IN OPHTHALMOLOGY

BY

J. HORTON YOUNG

R.A.M.C.

"Thus times do shift; each thing his turn does hold:
New things succeed, as former things grow old."

Robert Herrick.

THE advent of modern chemotherapy, and in particular the use of sulphonamide and its derivatives, has radically altered the method of treatment and the prognosis in many pathological conditions. One of the prime underlying principles of medicine and surgery is to prevent disease, and, where this is possible, to prevent further infection or complications in an already established lesion. Many examples of this are to be found in everyday medicine and surgery, but it is to sulphonamide and its derivatives, in this war, that one looks for the true fulfilment of these cardinal principles.

Sulphonamide and its derivatives have opened a vista in prophylaxis and healing unsurpassed in the annals of medicine and surgery. It is in the sphere of prophylaxis—used in the widest sense—that these drugs will achieve their greatest triumphs.

For the purpose of this article, two of the drugs at present in common use have been chosen in order to show how the principles enunciated above can be furthered by ophthalmologists in every-day clinical practice.

The drugs chosen were sulphonamide and red "prontosil soluble." The sulphonamide was given by internal administration in the form of 7½ gr. tablets, while red "prontosil soluble" was given as a local instillation in the conjunctival sac. The latter drug, being supplied in ampoules of 5 per cent. solution, was diluted with an equal volume of aqua pura to make up the strength of solution employed in these cases.

The following were the methods adopted and the lesions in which the drugs were employed.

A. Red "Prontosil Soluble"

For Diagnosis.—All traumatic lesions of the cornea and conjunctiva, including all burns, chemical or otherwise.

For Prophylaxis.—(1) To prevent secondary infections in all traumatic lesions of the globe and its adnexa.

(2) Before and after all operative procedures on the globe and adnexa.

(3) To prevent complications in established disease, as in corneal lesions which have the character of prehypopyon.

Prophylaxis has thus a triple function, first, of initiating primary healing, secondly, of limiting corneal involvement, and thirdly, of the preservation of corneal transparency by permitting a rapid epithelialisation of the lesions in the absence of sepsis.

For Treatment.—With the limited clinical material at my disposal, treatment has been confined to such cases as acute and chronic conjunctivitis, blepharitis, marginal ulcers, prehypopyon ulcers, hordeola, infected traumatic lesions, post operative infection about stitches of the conjunctivae, swabbing out suppurating cysts and for impregnating gauze used in packing wounds.

B. Sulphonamide

For Prophylaxis.—(1) Pre-operatively before abscission of an iris prolapse or performing any intra-ocular operation. In these cases, red "prontosil soluble" is employed as an additional safeguard.

For Treatment.—(1) Iritis and iridocyclitis non-specific, choroiditis.

(2) Iritis and iridocyclitis specific (gonorrhoeal).

(3) Prehypopyon ulcers. *No cases of hypopyon ulcers have occurred since the introduction of sulphonamide therapy.*

(4) Episcleritis non-specific in origin.

(5) Cellulitis of the orbit.
(6) Stitch (abscess) cellulitis.
(7) Intra-ocular infections.
(8) Trachoma.

A discussion on the merits of the treatment follows and deductions have been made from the clinical phenomena observed during treatment. The case histories have been left to the last. An endeavour has been made to give as diverse a list of cases as the scope of this article permits.

Clinical observations.—" Prontosil soluble " 2·5 per cent. local application.

For all traumatic lesions of the conjunctiva and the cornea, " prontosil soluble " has no peer. The contrast caused by the red dye against the white of the sclera and the background of the coloured iris gives the wound a red raw-meat appearance which is unmistakable. In burns of a chemical nature—cement, lime, etc.—the initial colouring of the lesion approximates more to a methyl orange colour, particularly in the conjunctival lesions. Moreover the daily instillation of " prontosil soluble " for the purpose of keeping down secondary infection of lesions also enables one to judge simultaneously the extent of epithelial regeneration, without the necessity of instilling fluorescein for this purpose. I have been amazed at the extraordinary rapidity with which epithelium regenerates if one can prevent, or control, the secondary infections of these traumatic lesions.

The principles which underlie my treatment of traumatic ocular lesions are as follows:—

In all trauma cases, irrespective of whether the conjunctiva or the cornea is involved, gutt. atropine 1 per cent. is instilled as a routine. In the case of elderly patients, homatropine is used as an alternative.

Secondary infection is prevented or controlled with " prontosil soluble," while warmth and the removal of non-viable epithelium and organisms are accomplished by warm lotio boracic irrigations. The resistance of the tissues and epithelial regeneration is enhanced by cod liver oil (neutral) drops and vitamin C tablets given by mouth or intramuscular injection. Where the lesion is of long standing and presents the appearance of a prehypopyon ulcer, the local action of " prontosil soluble " is fortified by oral sulphonamide medication in order to reach the organisms which have become entrenched in the oedematous tissues surrounding the ulcer.

Apart from these traumatic lesions, " prontosil soluble " has been used in a variety of conditions, such as preoperative sterilisant of the conjunctival sac; in the treatment of blepharitis; acute

conjunctivitis, angular, follicular and mucopurulent; chronic conjunctivitis; marginal ulcers; infected sockets; after epilation; post-operatively, in such cases as Meibomian cysts and where conjunctival stitches have been employed. Finally, it has been employed after enucleation of the globe. The orbital wound is then filled with " prontosil soluble."

The action of " prontosil soluble " in these infective conditions is quite different, clinically, from that which one sees in other forms of therapy for the same condition. Take acute conjunctivitis for instance and contrast the treatment by silver nitrate paintings and " prontosil soluble." In severe cases we get the following results :—

SILVER NITRATE.	" PRONTOSIL SOLUBLE."
Time of Healing—10-17 days.	*Time of Healing*—7-12 days.
Whitens more rapidly but with discharge over a longer period.	Whitens slowly but surely and with little discharge.
More active treatment required and more discomfort.	Almost immediate relief with simple instillations.
The lesion shows more rapid healing but symptoms do not subside until later.	The lesion mends slowly, but when the eye is white complete control of the infective process has been established.
Warm lavage necessary, otherwise the lesion tends to retrogress with excessive discharge.	Warm lavage of the eye is necessary with " prontosil soluble " otherwise the lesion tends to remain " fixed " at the level of healing established before warm bathings were discontinued.
Conclusion : Silver nitrate acts in a more critical manner with delayed convalescence.	Conclusion : " Prontosil soluble " promotes healing by a lytic process.

These points one will see in those cases of conjunctivitis which are associated with impetiginous lesions of the skin.

In blepharitis, " prontosil soluble " is an excellent diagnostic agent for determining clinically the more active areas of inflammation, for these stain readily and, during the process of healing, one can follow these areas and check the extent of healing at any given moment. " Prontosil soluble " will not completely cure blepharitis without active attention to the other factors which operate in this condition. It rapidly controls the infection and reduces the ordinary ulcerative blepharitis to a stage of blepharitis sicca in a remarkably short time and with great comfort to the patient.

The conjunctival infection and lid oedema which are associated with marginal ulceration is greatly helped by " prontosil soluble " since it dominates the infection and enables the corneal lesions to epithelialise over more rapidly. " Prontosil soluble " will not cure the lesion unless the associated focal infection, so frequently found in association with this particular lesion, is dealt with. The persistence of a mild infection of the bulbar conjunctiva (when slit-lamp examination shows that the ulcers have healed) would seem to prove that there is a local nervous reflex at work causing this dilation of the vessels.

In the virus infections of the eye, some lesions appear to clear more rapidly than others. The pain of herpetic cases does not appear to undergo any special amelioration such as occurs in other types of ocular inflammation. With the condition of superficial punctate keratitis complicating marginal ulceration, " prontosil soluble " is most helpful in controlling the associated conjunctival infection and in hastening the convalescence. The drug is then given in addition to the usual silver nitrate paintings and atropine drops.

The follicular infections of the conjunctiva respond especially well to the combined medication of " prontosil soluble " guttae and internal chemotherapy.

With regard to fatty orbital tissue, which has been the site of severe trauma and in which fatty necrosis and sloughing is inevitable, " prontosil soluble " is invaluable. It is instilled into the wound area after the enucleation of the remains of the globe and after every dressing. By this means, the extent of necrosis is limited, the secondary infection is kept to a minimum and the resulting scarring and contracture very much less. It must be remembered that the lining membrane of a socket is the conjunctiva, hence powdered sulphonamide is contra-indicated.

Trachoma is a condition in which I have had no experience with " prontosil soluble " therapy, except as regards one case only and that of very recent origin before there had been an opportunity for any gross pathology to develop. This was a case of 21 days' standing in which the lower lid conjunctiva and particularly the upper tarsal conjunctiva were very oedematous and the follicular reaction was most marked, but in which the bulbar conjunctiva was practically unaffected at the time of consultation. There was no pannus. Twenty-four hours treatment with sulphonamide and " prontosil soluble " sufficed to make the patient feel comfortable. Vide Case " T."

As this case came to hand after this article had been completed, the details up to the present time have been included to show that, while " prontosil soluble " may not eventually cure the condition, it has had a very favourable effect upon the course of

the disease, bringing it rapidly under control, to be dealt with by the usual methods should this combined treatment fail to effect a cure.

Contra-indications and *incompatibles* do not appear to exist where " prontosil soluble " therapy is employed in ocular lesions. One can employ in addition, atropine, cocaine, homatropine, paraffin, cod liver oil, ung. ac. boric, ung. hydrarg., ox. flav., silver nitrate paintings and various lotions, which include lotio ac. boric., oxy. cyanide, or salines (a supposed contra-indication in sulphonamide therapy). What is more, the efficacy of " prontosil soluble " is unaffected, and no peculiar precipitations occur in the conjunctival sac from intermixture of the drugs. The corneal epithelium is in no way damaged. In cases of cement and lime burns of the eye, the intermixture of cod liver oil, " prontosil soluble " and atropine produces a very rapid epithelialisation of the denuded areas. A 1/1000 strength for red " prontosil soluble " lotion would be most beneficial, but the cost of making it in sufficient quantity for this purpose is completely negatived by its economical use as a guttae.

" Prontosil soluble " therapy can be continued when internal sulphonamide medication has to be abandoned. Moreover, no cases of allergy have occurred and if they exist at all they must be very rare indeed. It can therefore be used as a regular out-patient therapy. In this connection, guttae " prontosil soluble " do not produce sulphonamide poisoning.

Ultra-violet light therapy does not appear to be a contra-indication in either oral chemotherapy or in " prontosil soluble " therapy. This combined form of treatment has been used without any skin complications developing, or the exhibition of any other untoward general symptoms.

Permanent staining of the cornea or the conjunctiva does not result from the use of red " prontosil soluble."

As to the strength of " prontosil soluble " to be employed, 2·5 per cent. has been selected because it has been successfully used in a case of spring catarrh (vide references). There is, however, a therapeutic argument in favour of this strength as chemotherapy acts more efficiently in concentrated doses, and if one is to treat virulent infections of the conjunctival sac, this drug must be given in a concentrated form and of such a p.H. that the cornea is not affected. The 2·5 per cent. solution meets these needs clinically. Practice has shown the value of the 2·5 per cent. solution and there is no need to revert to a weaker dose, especially as it may mitigate against the full therapeutic efficiency of the drug.

" Prontosil soluble " therapy acts so efficiently in such a great number of ocular conditions, that there is a tendency for one to

forget that other drugs exist. While cases may be " cured," the primary source of the whole trouble may be allowed to lie unexplored and produce a recrudescence of the lesion at some later date. This sense of false confidence is one of the pitfalls of chemotherapy which must be rigidly guarded against if one is to assess the final place of sulphonamide therapy in medicine.

Clinical Observations—Sulphonamide

The numerous clinical conditions, previously mentioned, deal with the successful treatments for which sulphonamide has been given, but it must not be assumed that the drug will be successful in all similar cases.

Its action in iritis can be dramatic and produce a cure, in another case all the acute symptoms quickly abate but one is left with a white eye and some fine " K.P." which does not clear up so rapidly. Where the cause of an iritis or an iridocyclitis is unknown, sulphonamide is the drug of choice while the aetiology is in the process of being discovered, for this drug has a faculty of making a patient comfortable as regards his ocular condition, and abates the acuteness of the attack, even if it does not cure the lesion. This point is well demonstrated in case history D.

Hypopyon ulcer is a condition in which sulphonamide should be invaluable. Up to the present however, this complication has been successfully combated by combined local and general chemotherapy.

Non-specific episcleritis responds well to oral sulphonamide medication. *It is most useful in combating the reactions which result from the removal of septic foci.*

With regard to intra-ocular infections the results are variable, and those infections present in the company of a friable non-metallic foreign body such as limestone may be held in check for a certain length of time but infection eventually dominates the clinical picture.

Chemotherapy has also been tried in many of the virus infections, but with rather unsatisfactory results as regards the corneal lesions, but it is of definite value in controlling the conjunctivitis, found in association with marginal ulceration, when this has been complicated by a virus lesion, such as superficial punctate keratitis. This form of therapy for S.P.K. has no advantage over the silver nitrate technique which has eventually to be instituted, if the superficial punctate keratitis is to be cleared up rapidly.

In all cases of cellulitis, potential " stitch " abscess, and other infective conditions about the orbit, sulphonamide is indicated. What is more, it enables conservative measures to be adopted, instead of the more radical operative procedures which one is

tempted to undertake for the relief of symptoms, when pus is suspected and the temperature is rising. Sulphonamide produces an early resolution of the infection and the pus " points " at the wound site. At the same time, the temperature falls by crisis but the pulse rate remains up until the infection is overcome. It is at this stage that one can consider leaving off the sulphonamide medication. It is necessary in all these infective conditions to apply heat in the usual way as it reinforces the effective action of the sulphonamide in much the same way that warm irrigations further " prontosil soluble " therapy.

In operative conditions about the eye or in traumatic lesions, one can instil sulphonamide powder in the wounds, but, as there is always the risk that some of the powder may get into the eye one always uses " prontosil soluble " for wound prophylaxis.

With regard to infective lesions on the face which have been complicated by lymphangitis, sulphonamide ointment 10 per cent., in adeps. lanae, gently rubbed into the affected areas, combined with chemotherapy and heat, will rapidly resolve the condition. Local concentration of the drug seems to be the most important factor in this type of therapy.

With the dosage so far employed, *i.e.*, grs. XV o.4.h.. only the minor complications of internal chemotherapy have become manifest and these were : cyanosis, drug fever, acidosis, dizziness and headache. So far, vomiting has not occurred although nausea was experienced. With or without nausea, disinclination for food was evident. Mental depression was not common and only seen in two cases. No cases of anuria, haematuria, nephritis, jaundice, leucopenia, agranulocytosis or haemolytic anaemia were met with. With a moderate dosage therefore, clinical results can be achieved without severe therapeutic complications.

SPECIAL NOTE :

(1) Chemotherapy and Chemical Warfare.—From the experience gained in the use of local chemotherapy in ocular chemical burns, I am convinced that " prontosil soluble " will be of incalculable assistance in the treatment of all ocular lesions which may result from chemical warfare.

(2) The use of sulphonamide in the treatment of other lesions, resulting from war trauma, will greatly improve the prognosis, not only as regards the ultimate cosmetic effect to be achieved, but also in respect of the functional capacity of the eye as a visual organ.

The case histories which follow are somewhat abbreviated and indicate the advantages and limitations of chemotherapy in ocular trauma and disease.

Case Histories—Local "Pontosil Soluble" Therapy

CASE 1.—E.H., dockyard worker, aged 34 years.

History.—While engaged in cutting steel with a machine, a large piece of steel flew off and struck the left eye. Admitted the same day, August 11, 1941.

On Examination.—V.R. 6/9. V.L. 6/9. Left eye, tension softish, but no perforation present. Left cornea shows two large vertical lacerations either side of the optical zone of the cornea, cutting deep into the corneal substance. Circumcorneal injection present. Wound fairly clean cut. Confirmed by slit-lamp. Treatment given included warm bathings, guttae atropine 1 per cent., "prontosil soluble" guttae 2·5 per cent., vitamin C and cod liver oil instillation, all being given t.d.s. No complications developed, vision remained unchanged and the patient's eye was white within seven days. He was discharged to full duty on the 11th day. V.R. 6/9. V.L. 6/9.

CASE 2.—R.H., L/Cpl. Aged 24 years. Admitted September 27, 1941. Myopic V.R. 6/36. V.L. 6/24. No glasses. (Previous exam.)

History.—Chemical burn (cement). While lowering cement down a 25 foot shaft to the patient, the bucket slipped and cement was thrown into his eyes.

On Examination.—V.R. less than 6/60. V.L. 6/36. Face covered in cement dust and the right conjunctival sac filled with it. A number of fine particles were seen in the left conjunctival sac and cornea.

Treatment.—All excess cement on face and around eye wiped off with moist swabs and the eyes irrigated with boracic lotion. Where the conjunctiva was impregnated, moist swabs were used for the removal of the cement dust. The impregnated cornea was cleared of cement by irrigation, moist swabs and by a blunt spud. Where necessary the epithelium was removed in order to obtain a clean surface.

The eye was then stained with 2·5 per cent. "prontosil soluble" in order to show clearly the extent of the burn and by contrast expose any of the greeny-yellow cement which had been overlooked in the preliminary cleansing. Two-thirds of the conjunctiva and the lower two-thirds of the cornea were seen to be badly burnt. Cement impregnated in the lid conjunctiva was well shown up and removed with a blunt spud. Note: For sheer contrast in all traumatic injuries of the conjunctiva and the cornea, red "prontosil soluble" has no peer as a diagnostic agent. Both eyes being absolutely clear of all irritant, treatment was concentrated on mydriasis, cleansing of the conjunctival sacs, prevention of secondary infection and epithelial regeneration. To this end lotio

boracic irrigations, gutt. atropine 1 per cent. b.d. were given. "Prontosil soluble" 2·5 per cent. gutt. t.i.d., cod liver oil drops every two hours and vitamin C one tab. daily. Epithelial regeneration was very rapid, the cornea being completely covered on the morning of October 1, 1941. It was interesting to note at this stage that the cod liver oil drops had ceased to sting the patient. On October 3, 1941, there was no staining of the cornea or conjunctiva. The right cornea showed a faint haziness in its lower half.

On October 5, 1941, V.R. 6/60, V.L. 6/36 (dilated pupils) and with correction V.R.—2·25 D. sph./—1·5 D. cyl.=6/5, V.L. —1·5 D. sph./—1·25 D. cyl.=6/6. There was no staining of the newly regenerated epithelial cells of the cornea. The patient was transferred to the convalescent home on October 8, 1941. This was a remarkable case, the original poor prognosis having to be completely reversed.

CASE 3.—Sapper J.P.M. *History.*—Fuel oil entered the eyes three months ago and since then has had three attacks of conjunctivitis, but this last attack was by far the worst.

Treated in the Medical Inspection Room for one week prior to admission. Has been "off colour" the last two months.

General condition.—The skin shows poor tone and the patient looks jaded and drawn about the face. Admitted September 27, 1941. Ocular examination: V.R.—6/18, V.L. 6/9. Both eyes equally affected with lid oedema, eczematous lid reaction from excessive lacrymation, oedematous conjunctiva, dilated vessels and mucopurulent discharge. The ocular clinical picture was that usually seen in severe marginal keratitis but there was no staining of the cornea. There were to be found, under oblique focal illumination small pin-point "blebs" but these were only discernable by noting the alteration in the corneal light reflexes at the limbus. These "blebs" did not burst or ulcerate and disappeared after thirty-six hours. No evidence of iritic reaction could be found, but it was decided to use gutt. atropine in case marginal ulceration should develop. Treatment consisted of lotio ac. boracic bathings, gutt. "prontosil soluble" 2·5 per cent. t.i.d., vitamin C one tab. daily, ung. hydrarg. ox. flav. 1 per cent. nocte, and a tonic R/mist. ferri et ammon. cit. ½ oz. with liq. arsenicalis M.ii added. Sig—½ oz. t.d.s. p.c. The whole condition cleared up in seven days and the patient was discharged to the convalescent home for seven days' rest. This eye whitened so gradually from day to day that there was some doubt as to the efficacy of "prontosil soluble" in this type of lesion but at the end of seven days the eye was perfectly healed.

Case Histories Illustrating Sulphonamide Therapy

CASE A.—Through and through perforation of the globe. A.F., seaman. Aged 42 years.

History.—Right eye injured in a bombing attack nine days previously, when it was pierced by a piece of shrapnel from one of the cannon gun shells of an enemy plane. Admitted 1941. He stated that at the time of injury he experienced great pain in the affected eye which was immediately followed by loss of vision.

On Examination.—R.V.=P.L. only, L.V. 3/60ths—3·5 D. sph. /3·5 D. cyl.=6/12ths. The right eye showed a perforating linear wound at the lateral limbus at " 9.30 o'clock " with iris prolapse. There were adhesions between the iris and the lips of the corneal wound with commencing infection in the form of a cloudy infiltration of the cornea. The iris prolapse was covered with a fine exudate. The anterior chamber had reformed but the wound and the prolapsed iris appeared to be infected and the vessels of the non-prolapsed iris engorged. The aqueous, apart from the hyphaema which had in part absorbed, appeared fairly clear. The infection had, therefore, not yet become intra-ocular. The iris was adherent to the perforated lens capsule. X-Ray disclosed a foreign body deep in the orbit and outside the globe. Enucleation of the globe was advised. The patient refused operation and, in order to gain the patient's confidence, a time limit was agreed upon, then, if the ocular condition had not radically improved, operation must be performed in the inferest of the remaining eye.

Treatment.—Sulphonamide therapy was started at once, commencing with 15 grs. every four hours, and after 10 doses, this was reduced to 7½ grs. t.d.s. Having given the patient about 90 grs. of sulphonamide, an operation was performed to free the infected prolapse from its adhesions to the corneal wound and abscise this prolapse, after pulling it clear of the corneal wound. The pillars were replaced. As the corneal wound edges came together naturally, no conjunctival flap was made and the wound allowed to drain freely into the conjunctival sac. Heat, gutt. atropine 1 per cent. and sulphonamide were continued. Within twelve hours the anterior chamber had reformed, the aqueous showed no sign of infection but there was some hyphaema present in the region of the iridectomy, which seemed as if it would most certainly become infected. After 36 hours it was evident that the eye would recover, as the cornea began to clear rapidly and the hyphaema was absorbing. At the end of three days the eye showed such remarkable improvement that the patient was informed that it might not be necessary to enucleate the damaged eye. This right eye made an uneventful recovery and, being perfectly white, the patient was discharged from the hospital 21 days after admission.

With regard to the sulphonamide therapy, the patient developed cyanosis and a temperature as complications, which subsided as soon as the sulphonamide was discontinued. This occurred on the sixth day and it was not found necessary to re-introduce sulphonamide into the treatment.

CASE B.—Cellulitis of orbit. W.S.G., seaman, tripped on deck and struck his right eye on a depth charge and deeply lacerated the skin in the region of the left eyebrow. The lesion was not stitched but when seen three days later in consultation, had a nasty cellulitis in the right superior orbital tissues. Suspecting necrosis of the right frontal bone, the patient was X-Rayed the same day, August 6, 1941, but this was negative. The wound was gently probed for evidence of suppuration but no pus was found. The temperature at this stage was 100° F. As the risk of spreading the infection into fresh tissue and involving the superior muscles of the globe, with the consequent contraction hypophoria, was very great, no further radical operative procedure was deemed advisable. Sulphonamide therapy was then commenced, 15 grs. every four hours for 48 hours and then 7½ grs. t.d.s. till the *pulse rate* came back to normal. The temperature dropped to normal within 15 hours and remained down. The pulse rate fell on the fourth day and the patient was discharged on the sixth day after admission.

CASE C.—Early stitch abscess following operation for bilateral chronic dacryocystitis. W.E.H., Pte. Aged 32 years. Inflamed and "discharging" eyes for 7 years, with inflamed lids and recurrent styes.

On Examination.—R.V. 6/6, L.V. 6/12. Bilateral blepharitis with bilateral chronic dacryocystitis was present.

In view of the long standing infection of the lacrymal sacs, the lacrymal bones were X-Rayed for necrosis. Necrosis of the left lacrymal bone was present. Bilateral dacryocystectomy was performed and the necrosed left lacrymal bone removed making a fistula into the middle meatus of the nose. A horsehair suture was passed through each internal canthal ligament. The wound healed without any recurrence of the original trouble, but the right stitch showed evidence of a spreading cellulitis in this region. The patient was given sulphonamide therapy, the stitch removed, the infection clearing within 24 hours. The operation took place on August 12, 1941. The patient was finally discharged with both sacs and lids healed on August 26, 1941, to full duty.

CASE D.—W.A.H., P.O. Aged 28 years.

History.—Left eye inflamed and very painful for four days. There had been an increasing dimness of vision in the affected eye. Had been feeling a little "off colour" for the last two weeks. History of gonorrhoea 4 years previously. The patient was married one month ago.

On Examination.—R.V. 6/6, L.V. 6/18, 6/12 pt. Left acute iridocyclitis present. Special features: Annular synechiae present with fibro-gelatinous exudate in the pupillary zone. Iris very engorged. Slit-lamp confirmed. There was no evidence of gummatous infiltration but very fine " K.P." present. The patient was admitted and the usual treatment prescribed but in addition a sub-conjunctival injection of " mydricain equivalent " (prepared by the hospital Dispenser) and sulphonamide, 15 grs. every four hours, were given for 48 hours and then 7½ grs. three times a day. The iridocyclitis settled down very rapidly and by September 15, 1941, the eye was quiet, except for a yellowish discolouration of the sclera. The slit-lamp revealed, however, that fine " K.P." was still present.

The day previously, September 14, 1941, the patient's temperature had risen to 101° F. and cyanosis was present. As the eye was white, chemotherapy was suspended. The temperature and pulse rate immediately reverted to normal. On Sunday morning, the 21st, fine " K.P." was still present and sulphonamide therapy was re-introduced. The eye was still without any vestige of circumciliary injection. Kahn test at this stage was negative and a blood count, taken on the day that the patient reached a temperature of 101° F., showed a moderate leucocytosis 18,000 w.b.cs., with a diminution of polymorphs and an increase in proportion of all the other cell elements, the greatest increase being in the lymphocytes, which numbered 28 per cent. General physical examination disclosed nil abnormal except an intense pallor. The blood culture was negative and the haemoglobin percentage was 105 per cent. An X-Ray of the chest proved negative. As the patient's ship was leaving for the United Kingdom, he was discharged to a base hospital establishment for further observation. Fine precipitates were still present, but the eye was white.

CASE E.—F.B., dockyard worker. Aged 28 years.

History.—While working among explosive charges with a number of other workmen, one of the cordite charges for ——— shells was accidentally touched off. The patient was badly pitted with small pieces of rock, and a number of pieces of expended cordite debris were recovered from his hair. At the time of the explosion the left eye was damaged and the patient experienced great pain, with loss of sight. An X-Ray was done to localise the foreign body and assist in its identity. Three non-magnetic foreign bodies were localised within the globe area.

On Examination.—Left eye showed a large irregular perforation at two o'clock on the corneo-scleral junction. The wound edges were gaping and showed evidence of powdery opacity, the anterior chamber was collapsed.

A large area of the left iris had been torn away and displaced

into the wound of the lens. *The aqueous was milky but no obvious hyphaema present.* Traumatic perforation of the left lens was present and the vitreous was cloudy. Patient admitted for treatment.

Enucleation of the left globe was advised, especially as the single foreign body, in passing through the globe, had crumbled into pieces. The patient was adverse to having the eye enucleated without a trial treatment first, and a course of sulphonamide therapy was decided upon. The usual doses (grs. 15 four times a day for 48 hours) were given at the beginning, easing off to the maintenance dose of 7½ grs. t.d.s., gutt. atropine 1 per cent., warm bathings and guttae "prontosil soluble" 2·5 per cent. were prescribed in addition.

The left eye appeared to be going on nicely, but for an increasing oedema of the conjunctiva, in spite of perfect wound healing, and a steadily clearing aqueous. A peculiar fluorescence of the vitreous and a rising ocular tension told a different story. Left fronto-temporal cephalalgia of increasing intensity was another feature of this infection. These signs and symptoms were obvious from the tenth to the twelfth day, on which day the eye was enucleated.

A post-mortem on the globe showed that almost the whole of the vitreous was infected, one fragment of limestone being impacted in the ciliary body and the other two pieces were to be seen in the vitreous.

CASE F.—Private. Aged 21 years. First seen January 6, 1941, and admitted January 7, 1941.

History.—"Had been under treatment at the Infectious Diseases Hospital for impetigo of the face and arms during the last three days and had developed a nasty *conjunctivitis* in the right eye."

On Examination.—R.V. 6/6, L.V. 6/6. The usual signs and symptoms were present and the case looked typical of those cases of conjunctivitis which are found as complications of impetiginous lesions of the skin. Patient had had treatment at the Infectious Diseases Hospital prior to seeing me at consultation. As the skin lesion was practically healed, the patient was admitted to the Military Hospital. On October 8, 1941, the right eye was recovering but the left one became involved and this eye was given the same treatment, which consisted of lotio boracic bathings, gutt. "prontosil soluble" 2·5 per cent. t.d.s., ung. h.o.f. 1 per cent. nocte. Both eyes were completely healed on October 16, 1941.

CASE G.—A.B., October 2, 1941.

History.—Left eye red and inflamed seven days prior to admission.

On Examination.—R.V. 6/6, L.V. 6/6. A large *marginal ulcer* 3 mm. by 1 mm. in size was seen in the "one o'clock" limbal

area of the cornea. This ulcer was filled with whitish-yellow necrotic debris and had quite a leash of vessels going to it from the nearby conjunctiva. There was also a fair amount of purplish ciliary injection. Another ulcer, not so large, and with necrotic debris, was also to be seen at "3.30 o'clock." Treatment was commenced with warm boracic bathings, gutt. atropine 1 per cent., gutt. "prontosil soluble" 2·5 per cent. and with sulphonamide 7½ grs. t.d.s. Six days later the eye was almost white, only a small amount of necrotic debris and a few fine vessels being left in the conjunctiva adjoining the large ulcer area. The other ulcer had healed and ciliary injection had gone. On October 14, 1941, the eye was quiet but the patient's general condition, which was not so satisfactory, necessitated his being placed on U.V.L. therapy. He was discharged on October 20, 1941.

Combined guttae "prontosil soluble" and internal sulphonamide medication.

CASE H.—Traumatic ulceration with photophthalmia and iritis. L.F., dockyard worker. Aged 54 years. September 22, 1941.

History.—"Twelve years ago, whilst painting, splashed some paint in the left eye. Was in hospital for fifteen days with the injury. The sight in the left eye had been getting worse."

Present History.—"While welding three days ago, received a 'flash' from the welding arc and at the same time felt something strike the left eye which had since become progressively red and painful." Admitted September 23, 1941.

On Examination.—V.R. 6/9, V.L. < 6/60. Left eye showed evidence of a corneal ulcer at "6 o'clock" in the paracentral zone of the cornea with infiltration of this area. No evidence of hypopyon seen, but the ulcer looked suspicious. In association with this there was a marked injection of the conjunctiva and severe iritic reaction. There was also an immature cataract of a diffuse type. The tension was normal. There was no evidence of perforation, the cataract looked essentially of the senile type but an X-Ray was done to confirm the absence of foreign body. The X-Ray was negative. Treatment was then given as follows: Gutt. atropine 1 per cent. b.d., gutt. "prontosil soluble" 2·5 per cent. t.i.d., warm lotio boracic bathings every four hours, sulphonamide 15 grs. t.d.s. for 48 hours and vitamin C on tablet daily. The patient was discharged to full duty six days later, September 28, 1941.

CASE I.—Trachoma. J.M. (A.B.). Admitted October 14, 1941.

"Red and inflamed right eye for 21 days, which had been discharging, particularly in the early morning. Since the attack developed, the right eyelid has begun to droop and continued to do so, although this eye had become white. It has never been really painful, but has always felt 'uncomfortable.' About this

time, six other members of the crew developed a similar condition, which appeared to be of greater severity but without the drooping eyelid."

On Examination.—R.V. —6/9 pt., L.V. —6/6. Right palpebral fissure smaller than the left, no muscular weakness present in upper lid, nerve supply intact. Some injection of the bulbar conjunctiva, mainly veins and slight in appearance. Right lower fornix shallower than the left fornix. The right upper lid conjunctiva showed marked follicular reaction, with oedema, over the whole of the lid area. The lid conjunctival vessels were not seen and the lid had a granular appearance in which the follicles were poorly delineated. There was no evidence of pannus, but the clinical picture was suggestive of trachoma.

Treatment.—Sulphonamide, grs. 15, by internal medication, was given t.i.d. for three days, followed by maintenance doses of grs. 7½ t.i.d. In addition, " prontosil soluble " 2·5 per cent. guttae were given t.i.d. after bathing with warm boracic lotion. Ung. hydrarg. ox. flav. was prescribed nocte.

Course of the lesion.—The infective process began to show improvement within the first 24 hours and manifested itself as a subjective reaction in which the patient said the eye felt comfortable and he did not feel conscious of the defect as he had done before. On October 16, 1941, the first lid reactions to the treatment made their appearance, the conjunctiva becoming less oedematous and the follicles standing out a little more clearly. On October 24, 1941, the conjunctival oedema had almost subsided. The follicles were beautifully delineated over the whole of the conjunctiva covering the upper tarsal plate, but the follicles were massed in greater quantity on the upper tarsal side. In the lower lid, the conjunctival folds were covered with follicles and they were particularly well seen just below the free edge of the lid on its conjunctival surface.

On October 31, 1941, the lids were free of all follicle formation except at the outer upper end of the tarsal plate, where two fine follicles were to be seen. The lower lid appeared clear and, clinically, the eye was almost healed. The ptosis had disappeared completely.

Patient discharged to the United Kingdom on November 2, 1941, for further observation.

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A REPORT ON AN ANALYSIS OF CASES AT AN EYE CLINIC IN LAGOS, NIGERIA*

BY

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WEST AFRICA MEDICAL SERVICE

THIS report is based on personal experiences during ten months part-time work at an eye clinic at the African Hospital, Lagos, in 1939-40.

The majority of the cases were referred from the general outpatients as well as from a school clinic. The report consists of an analysis of the larger groups of diseases and was made to act as a guide for future work.

Some observations have been made on a few of the diseases commonly seen and the problems connected with them.

Statistics extracted from Annual Medical Reports for Nigeria have been added.

More than 1,200 cases attended the clinic but this report is based on 801 only, as it was impossible, in the time allotted for

	Africans 734	Europeans 67
Errors of Refraction	161	28
Presbyopia	23	—
Conjunctival diseases	198	8
Cataract	57	1
Corneal diseases	47	5
Foreign bodies	47	4
Defective vision	161	1 Toxic amblyopia 8 Asthenopia
	694	55

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this work, to examine and keep records of all the patients who attended.

The cases not accounted for in the above table were various other conditions such as glaucoma, choroiditis, congenital anomalies etc. Conditions such as orbital cellulitis secondary to nasal sinusitis are not rare. At least six cases have been seen and I understand that infected sinuses are commonly found in Lagos during post-mortem examinations.[1] The correlation of these factors has yet to be made. Chronic iridocyclitis—a few of these were seen—and in each there was dense vitreous haze. In nearly every disease complete investigation is called for and in many cases little help can be obtained from text-books. Great variations are seen in ophthalmoscopic appearance and the anomalies of pigmentation in the fundus need considerable experience for their correct determination. Numerical extractions from the European cases have been made for purposes of comparison.

Refractive errors.—Hypermetropia preponderates but the number of cases of myopia relative to the hypermetropia is not consonant with the statements appearing in text-books. Several of these state that myopia is rarely found in uncivilised or savage nations.[2, 3, 4, 5]

The numerical representation of ametropia was:—

Hypermetropia	61
Myopia	50
Astigmatism	50

(Records of the degree of astigmatism could not be accurately tabulated).

Only those whose refraction was measured by retinoscopy and whose vision could be improved by correcting the error were included in this table. When the refractive error was small and the loss of vision was disproportionately great the case was placed in the group " defective vision " which is dealt with later.

Conjunctival diseases.—The majority of the cases seen could be divided into three groups, trachoma, spring catarrh and purulent conjunctivitis, thus only the most serious acute and the chronic eye diseases were referred to the eye clinic; all the other cases were treated at the general out-patients. Phlyctenular conjunctivitis was rarely seen—?1 case.

Trachoma.—66 cases. In each case conjunctival smears were examined for rickettsia and 36 were found positive. Smears from controls (10) were also examined and all were negative. The figure for rickettsia bodies in smears from cases of trachoma varies from 25 per cent. to 100 per cent. (Duke-Elder).[6] The higher figures being for untreated cases in young subjects. The figures for Lagos are therefore about average since most of the patients attending

the clinic had been treated for years with European or native medicine and often with both. The smears were examined by Dr. E. C. Smith, Assistant Director of Laboratory Service, who reported the presence of the metachromatic type of " corps elementaire " as described by Foley and Parrot.[7] Of interest from the clinical standpoint is the remarkable effect of sulphonamides on the disease. Two cases will serve as examples.

Case A1.—A male prisoner, aged 38 years, had " eye trouble " for two years. Having been treated for conjunctivitis for 5 months he was then referred to the eye clinic on July 31, 1939, with the following notes: " C/O eye trouble; watering of both eyes; persistent pain; cannot see well. Dull colour of both corneae. Has had treatment."

First seen on August 3, 1939. Trachoma—pannus + + corneal ulcers and chemosis of conjunctiva, lids oedematous—lacrymation + + rickettsia + +.

Streptocide prescribed 1 gramme t.d.s. After five days " result surprisingly good—no lacrymation, congestion of conjunctiva much less—swelling of lids diminished, cornea clearing."

The drug was continued for thirteen days; local treatment was then applied.

Case 2.—Female, aged 21 years. Trachoma—duration about one year. Laboratory report—" rickettsia + together with a heavy infection." A very severe case—pannus = + + with ulcers; both eyes. Softened and swollen tarsal plates and unable to raise lids or open eyes. Lacrymation continuous. Photophobia marked.

August 15, 1939, admitted to hospital. Temperature 99·4° streptocide 2 tabs. t.d.s. for 10 days, also atropine. Temperature normal on the 4th day and remained normal thereafter.

The patient's own description is given as recorded by the African nurse in charge.

A2. 8wd. 2.—August 17, 1939.—Patient reports great mark of improvement. Tears discharge, very much lessen. Can tolerate light better than before. Headache and acute pain ceased.

August 18, 1939.—Patient slept well in the night with no headache.

August 19, 1939.—Slept well. Tears discharged stopped completely.

August 20, 1939.—Very pleased with herself. Slept well.

August 21, 1939.—Better sight than before.

August 22, 1939.—Still improving.

August 23, 1939.—Excepting that she can't open the eyes wide, otherwise, there is a very great improvement.

August 24, 1939.—Patient wishes to go home, condition still improving.

The rapid improvement shown in these two cases and in many

other cases was very striking and from my observations I consider that the sulphonamides do more than merely clear up a superimposed infection.[8] No investigation as to the bacterial flora of the conjunctival sac was possible in these cases but even where there were few clinical signs of secondary infection the drug had a good effect and was greatly appreciated by the patients. The effects of sulphonamides on the rickettsia bodies was not noted.

Apart from the loss of vision due to pannus and corneal ulceration the more severe sequelae of trachoma—entropion, trichiasis —were seldom seen. On the other hand I have been informed that entropion was frequently observed in the course of a sleeping sickness survey and that about 10 out of every 700 inhabitants of that part of Northern Nigeria suffered from this distressing condition.[9]

Spring catarrh.—Two forms are seen about equally—bulbar and palpebral. The bulbar type in its mildest form is found as a faint circum-corneal hyperaemia. At a slightly later stage this circum-corneal area becomes infiltrated with pigment and takes a brownish tinge.

With each recurrence the epithelium at the limbus proliferates, becomes gelatinous looking and tends to spread inwards and become heaped-up over the corneal margin.

This proliferation may be localised or completely surround the cornea and is a constant feature in cases that have become chronic. The milky-white appearance described for this type in text-books has not been observed;[10] possibly the pigmentation may account for this.

Palpebral type.—In the earliest stages there is a faint papillary hypertrophy at the edge of the convex border of the upper tarsal plate. As the disease progresses the roughened area extends downwards over the tarsal plate and also becomes more coarse in type.

In the more chronic cases the text-book description of " paving stone " or " cobble stone paving " due to the flattening of the papillae is seen. There is a milky-white membrane in this form which is typical; it may be picked up on a wooden applicator or swabbed away and the paving stone condition of the tarsal conjunctiva is then readily seen. This is the type which is apt to be confused with trachoma but pannus is never seen unless both diseases are present together; probably a not uncommon occurrence.

In the conjunctival smears taken for trachoma, eosinophiles were noted in 10 cases but in only two of these were rickettsia also found. I am not able to say now whether these were marked or mild clinical cases of trachoma.

Four out of 7 smears taken from cases of spring catarrh showed eosinophilia.

Foreign bodies.—The comparatively large number of cases referred to the clinic deserves some comment. In the main two reasons account for this :—

(*a*) Claims for compensation frequently arise since many of these cases are due to injuries received at work. Foreign bodies are frequently missed at a busy out-patient department as suitable lighting and equipment are not always available.

(*b*) The severity of the injury. In several cases it was found that a splinter of wood had penetrated the globe. Wood-cutting with matchettes or axes is universal in Nigeria, so that injuries of this type probably occur frequently and many eyes must be lost irretrievably through this cause.

Keratitis.—Most of the cases were corneal ulcers and it has been observed that unless intensive treatment is started promptly the ulcer continues to extend, leading to perforation and often loss of an eye. Unless seen at the beginning of the disease these patients were all treated as in-patients. Lowered resistance, spring catarrh, a poor diet and concurrent diseases (helminths, malaria etc.) may account for the rapid extension of the ulcer. It is probable that a large number of the blind eyes that are commonly seen throughout Nigeria are due to this disease. Superficial punctate keratitis is not uncommon and it would be of interest to determine whether this is related to onchocerca volvulus or is the tropical epidemic type.[11] No interstitial keratitis was seen.

Defective Vision—161 Cases

Under this heading is placed a large number of cases the aetiology of which is obscure.

It has been stated that of the 1,200 patients on the register 801 only had been investigated and diagnosed. It is probable that most of the remaining 399 would have been added to this section as all acute cases were given priority at the clinic. A large number of these patients were school children. From the nature of their complaint and as a result of the clinical findings three groups have been formed.

Group I. Those who complain that, after reading for half an hour or so, their eyes pain and they can do no more work. Visual acuity is normal and small print can be read but only after much encouragement by the doctor and apparent effort by the patient.

Group II. Those who complain that they are unable to see distant or near objects clearly. Visual acuity for distance and near types is subnormal in varying degrees but improves after the exhibition of a mydriatic.

Group III. Similar to group II but there is no improvement in visual acuity at the post-mydriatic test.

In dealing with this section the following conditions must be considered.

(*a*) Avitaminosis—pellagra.
(*b*) Asthenopia nervosa.
(*c*) Chronic conjunctivitis—spring catarrh.

The complexity of this entity coupled with the fact that comparatively little investigation of the subject has been made has given rise to a very gross misrepresentation of the facts.

It has been stated that many of these patients are malingerers or that they wish to obtain spectacles for pseudo-cosmetic purposes and out of a desire to imitate. Nothing is more certain than that these statements are incorrect, and being expressed as is frequently the case by responsible persons, they constitute a grave danger to the welfare of the community. The truth is that as a result the powerful propaganda of those to whom spectacles have been of benefit, and of advertisements, those who suffer from defective vision are confident that their sight can be improved by wearing spectacles. The tendency is to try to obtain this panacea by asking the physician to prescribe spectacles.

Group I. The symptoms of the patients in this group are common to chronic conjunctivitis and asthenopia nervosa. Chronic conjunctivitis is commonly seen in the form of recurrent attacks of spring catarrh which leave a residual hyperplasia of the circumcorneal and tarsal conjunctiva. Angular stomatitis frequently occurs, and as it is an early sign of B-avitaminosis, all the patients in this group exhibiting this sign are liable to be classed as cases of B-avitaminosis or pellagra.

Asthenopia nervosa in school children appears to be common the world over.

Group II. The cases in this group would appear to be of the same type but of a more advanced stage than those in Group I. Having discovered that visual acuity is subnormal, examination with a mydriatic is the routine. Some cases will be found to have refractive errors, in others no appreciable error is found or perhaps a small astigmatic error.

At the post-mydriatic test it is frequently discovered that visual acuity has become normal. Cases have been seen where the acuity altered from 6/24 to 6/6 at the post-mydriatic test.

Is it possible that accommodative asthenopia has been added to the cause operating in Group I? Most African scholars have a real desire to study and may be seen attempting to read by the light of a street lamp. A great strain must be imposed in this way. The relief afforded by atropine and the enforced rest might account for the improvement in visual acuity.

Group III. The difference between this group and group II is that visual acuity does not improve after the rest enforced by

the mydriatic. The cause of the defective vision in this group has been ascribed by FitzGerald Moore to " vitamin B2 deficiency probably associated also with a toxin element in certain foodstuffs."[12, 13, 14].

The cases in this group agree with the classical types of the syndrome which he has described. Some of the cases in the other groups may represent the earliest stage of this condition.

The difficulties of differentiating the causal factors is increased by the type and degree of recovery resulting from treatment with the B vitamins. In a number of FitzGerald Moore's cases distant vision became normal while the improvement in near vision was not so marked. In this connection he has written " absolute cure is not possible—vision may improve to 6/6 but there is difficulty in sustained reading of small print." This is a result of the atrophy of the macular fibres and in advanced cases there is a marked pallor of the temporal half of the optic disc.

The epithelial lesions which form part of the " syndrome " described by FitzGerald Moore were not as commonly seen at the clinic as might have been expected. Several factors may account for this.

(*a*) Most of the cases were referred and treatment by various drugs had already been given.

(*b*) A great deal of attention has been drawn to dietetics in the last ten years or so and its importance in this condition has been emphasised by articles in the lay press and by special reports.

(*c*) The education authorities are becoming dietetic-minded.

(*d*) The effects of treatment by marmite, yeast and/or a balanced diet are being realised.

(*e*) General educational uplift of the public.

With regard to (*d*) figures are appended to show the quantities of marmite and yeast prescribed in Lagos during the past four years and to this must be added an unknown quantity sold by commercial firms.

Year	Yeast lbs.	Marmite lbs.
1936	Nil	1,869
1937	150	347
1938	1,267	404
1939	1,274	160

It is probably correct to assume that most of these drugs have been issued to the school children who form the majority of the group now under consideration.

In 1938 when stationed at Warri on the Nigerian Coast the writer examined 787 school children for visual acuity and epithelial

lesions, *e.g.*, the types connected with the syndrome mentioned above. The following results were obtained:—

1. Ninety-seven or 12·3 per cent. had subnormal vision, *i.e.*, less than 6/6 each eye.

2. One hundred and seventy-four or 22 per cent. had epithelial lesions.

3. Forty-nine had both epithelial lesions and defective vision —this means that 28 per cent. of cases with epithelial lesions suffered from defective vision.

In North Ceylon 19·8 per cent. of 1,497 children showed the characteristic mouth lesions.[15, 16]

As a complete investigation of the causes of defective vision in the cases related above was not possible at the time no definite conclusion can therefore be drawn from these figures but they may prove of interest to future observers.

The following figures extracted from Annual Medical Reports for Nigeria give some indication of the extent of primary disease of the eye. Figures for the African Hospital, Lagos, but not including the school clinic are also appended:—

Year	Total	Trachoma	Refract. Errors	Conjunc-tivitis	Lagos total
1935	13,536	217	329	9,942	1,040
1936	18,341	184	392	11,906	1,154
1937	19,805	137	294	13,824	1,029
1938	14,447	136	302	11,955	1,308
1939	18,885	201			1,266

In his foreword to the Annual Medical Report for 1938 Sir Rupert Briercliffe, Director of Medical Services, wrote: " Nigeria is a country offering much field of study as yet unexplored for the specialist in every branch of science."

That the field of study for the ophthalmologist is great will be obvious from the observations detailed above. Many blind spots remain for the investigator of the future.

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A NOTE ON TWO CASES OF MEGALOCORNEA

BY

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ALTHOUGH over 80 cases of megalocornea are on record (Duke-Elder, 1938), cataract extractions in the condition are sufficiently rare to rank as unusual surgical procedures. It would seem worth while reporting other cases.

On September 16, 1941, I was asked by Dr. Bourne of Dulwich Hospital to see a man with very large eyes. He was aged 58 years, and was recovering from haemorrhage from a gastric ulcer. He had also had severe bleeding from piles. He complained that since the illness his vision had failed considerably. Previously, vision had been good, in fact, he had been an army driver in the 1914-18 Great War. On examination I found he had bilateral megalocornea. The corneae measured 14 mms. in the horizontal meridian, and were large and lustrous. Slit-lamp examination showed no folds or splits in Descemet's membrane. Each iris presented a somewhat atrophic appearance with a vertically oval pupil rather like that of a cat. There were very deep anterior chambers. The pupils reacted well to light and dilated widely with homatropine. The tension of the eyes was normal. Bilateral arcus senilis was present. (Figs. 1 and 2).

Both lenses showed cuneiform cortical lens opacities which effectually masked the fundus appearances. He could see hand movements, and projection of light was good in the left eye. In the right eye only the temporal half of the visual field was present. At this period the patient was still weak from haemorrhage from an ulcer

demonstrated by X-ray on the lesser curvature of the stomach. His haemoglobin was only 48 per cent. of the normal.

By September 30, 1941, his general condition was much better, though the lenses were more opaque. Completely incapacitated by his poor sight he was transferred to Horton Hospital, Epsom, for cataract extraction.

FIG. 1.

The grandfather's right eye.

FIG. 2.

The grandfather's eyes.

Enquiry showed that his grandson suffered from the same condition; and I was afforded an opportunity of examining the boy. He was a cheerful lad, his large and lustrous eyes giving him something of the appearance of a spectral Tarsier (Figs. 3 and 4). He too had an arcus senilis; but his pupils, unlike those of his grandfather, were circular. Fundi and lenses were normal and vision was

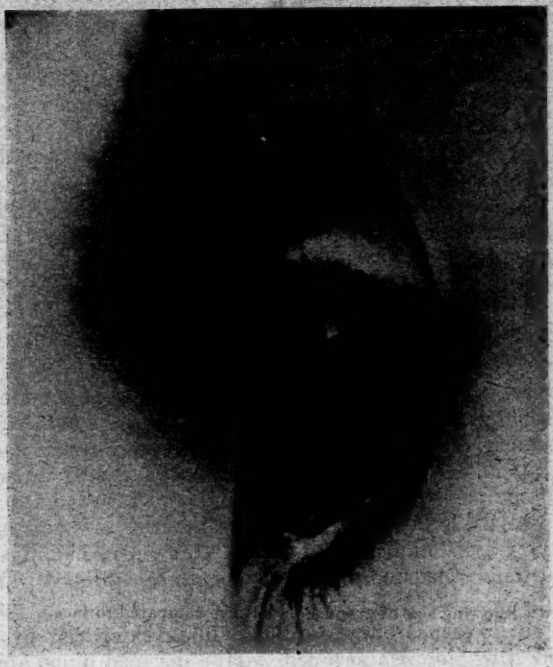

FIG. 3.

The grandson's left eye.

6/9 in each eye. There was no associated defect in intelligence in either case; the boy had won a scholarship, and the grandfather was a quick-witted cockney workman. I examined the boy's mother, whose eyes were in no way abnormal. No other members of the family were available for inspection; but the testimony of the three seen was so definite that I think the pedigree (Fig. 5) is reliable. It will be seen that my elder patient had an uncle with megalocornea. His mother was "partially paralysed from the knees downward." One of his own daughters had the same defect, which I had no opportunity of seeing. There was no consanguinity in the family.

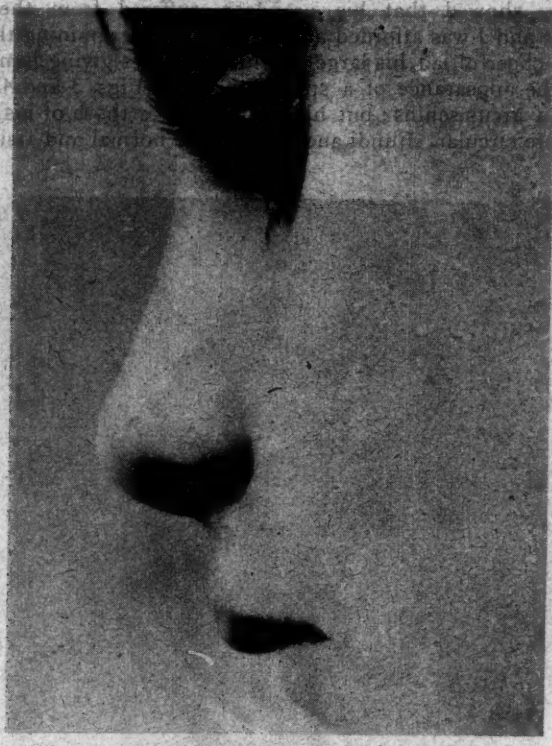

FIG. 4.

Showing size of grandson's left eye compared to face.

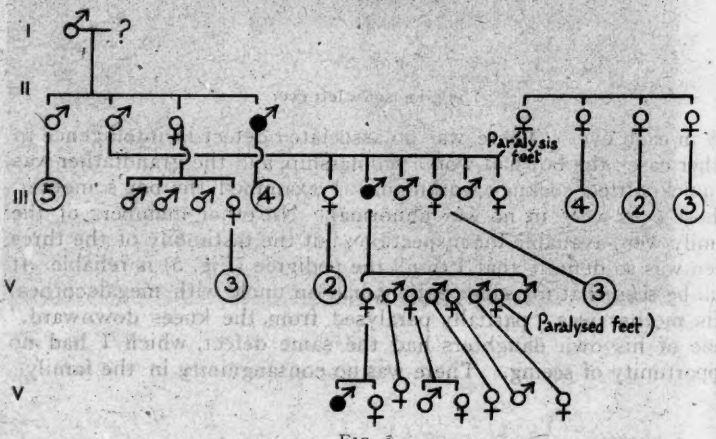

FIG. 5.

It will be noted that all three cases of megalocornea were in males.

By November 29, 1941, the patient had recovered sufficiently from his gastric haemorrhage to justify cataract extractions. Owing to the rather intimidating accounts of such extractions in the literature, it was thought worth while to perform a trial extraction on the right eye, in spite of the poor projection. Many of the operative difficulties recorded seem to be due to pressure on the globe during extraction, so that it was thought best to essay an intracapsular extraction with forceps on the eye. The facial nerve was blocked with 5 per cent. novocaine and adrenalin by the O'Brien method; and absolute akinesia of the orbicularis was obtained. A novocaine-adrenalin retrobulbar injection was given and the patient left 15 minutes to allow his intra-ocular pressure to become as much lowered as possible by the adrenalin. I thought a large conjunctival flap would be useful; and never having performed a cataract section on such an eye before, I raised the conjunctiva above the cornea by a subconjunctival injection of saline to help in cutting the flap. It was interesting to see that the injection fluid, creeping forward subconjunctivally, raised the upper portion of the "arcus senilis" with the conjunctiva. A superior rectus stitch was inserted.

My cataract section turned out like any section in a less abnormal eye; and I cut a large conjunctival flap. It was thought that the oval pupil might present difficulties, so a complete iridectomy was performed, followed by an intracapsular extraction in the ordinary manner with Arruga forceps, no complication occurring. The conjunctival flap was sutured into place with 6/0 plain catgut. The lens, examined afterwards, seemed normal in size, a rather soft cataract with unbroken capsule and the usual distortion from forceps traction.

The eye recovered rapidly; and soon the causes of the eccentric projection could be seen. The disc was atrophic with blurring of the temporal margin. About 6 o'clock there was a patch of choroidal atrophy in the far periphery. The ciliary body could easily be seen through the iridectomy. There were some vitreous opacities present; but the patient was delighted with the increase of vision in what he had been assured was likely to be a useless eye (Fig. 6).

Exactly the same technique was employed when the second cataract was extracted on December 29, 1941. This time the patient was a little nervous, rolling his eye while the iridectomy was being performed, so that a narrow bridge of iris was unintentionally left at the pupillary margin. The bridge was divided with de Wecker scissors before completing an intracapsular forceps extraction as in the other eye.

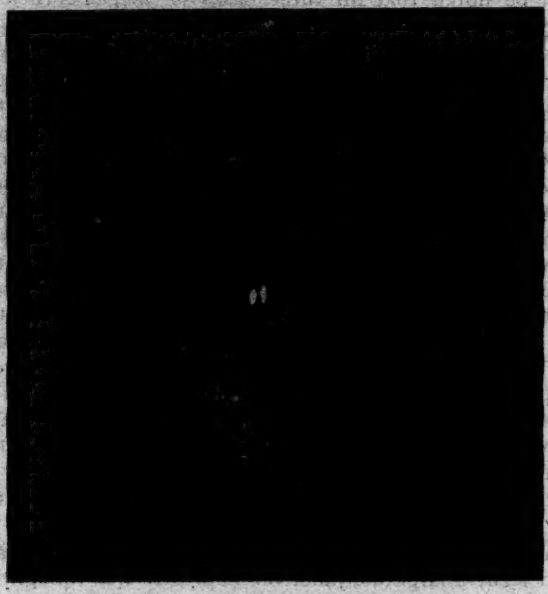

FIG. 6.

Right eye of grandfather after operation.

There was no complication during recovery save a few lines of striate keratitis during healing, presumably from the very large section. There were vitreous opacities in the left eye also; otherwise the fundus was normal. The patient has been frequently seen since. The left vision is 6/9 with a +9·0 D.Sph. and +2·0 D.Cyl. axis 180° correction.

No definite cause was found for the partial atrophy of the right optic nerve. The patient was certain the eye had been good before the gastric bleeding, which may well have been the cause.

Remarks

Cataract is a common complication of megalocornea, Veil and Sarrazin (1939) even stating that it is invariable by the time the patients reach the age of 40-50 years. Vail (1931) summarised 69 reported cases of which 27 had cataract. Of these six are described as having anterior capsular, four posterior subcapsular, and two nuclear opacities. There were three Morgagnian and two black cataracts. No details are given of the remaining 10 cases. Vail (1931) reported 18 extractions by eight surgeons, and three cases

have been reported without detail since. The favourite technique seems to have been iridectomy followed by a spoon extraction, with or without counter-pressure (10 cases). Iridectomy, extracapsular extraction, and later needling, have been done in two cases. One case each are on record by simple extraction, delivery by needle, delivery by forceps, and the Madras method. Vail noted that vitreous was certainly lost in seven cases, probably he thinks, in three other vaguely reported cases. Three extractions were complete failures, three were followed by retinal detachment later, and in three cases iritis is noted. Probably in 12 cases useful vision was obtained.

So many cases are reported with a tremulous lens that intracapsular extraction seemed worth trial in the case reported above.

I am much indebted to Messrs. H. Bentley, A. D. Griffith, W. T. C. Lumley, and G. C. Pritchard for help and advice; to Mr. L. B. Bourne and Mr. C. M. Johnston for photographs, and to Dr. W. D. Nicol, the medical superintendent of Horton Hospital for permission to report the case.

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INCLUSION CONJUNCTIVITIS

BY

A. F. MACCALLAN, C.B.E.

LONDON

INCLUSION conjunctivitis is a term which includes three forms of follicular inflammation of the conjunctiva; these are swimming-bath conjunctivitis, conjunctivitis of swimming-bath type but contracted elsewhere than in swimming-baths, and inclusion blennorrhoea or non-bacterial ophthalmia neonatorum.

Each of them is caused by an identical virus infection which consists of bodies included within the cytoplasm of the epithelial cells of the conjunctiva. The inclusion bodies exhibit two phases of development known as elementary bodies and initial bodies, collectively they are called Halberstaedter-Prowaczek Körperchen (or for short H.P.K.) after their original discoverers.

Swimming-bath conjunctivitis is rarely seen in England but is not uncommon among young men on the continent of Europe. It is propagated by persons infected with inclusion urethritis or

inclusion cervicitis who urinate while in the bath. A conjunctivitis of a similar clinical type may be contracted by persons who have never entered a public swimming-bath from association with one who has swimming-bath conjunctivitis, or from an infant the subject of inclusion blennorrhoea. Non-bacterial ophthalmia neonatorum or inclusion blennorrhoea is acquired during the passage of the infant through the birth canal of the mother; it may coexist with bacterial ophthalmia neonatorum. The mixed form of ophthalmia neonatorum due to bacterial (generally gonococcal) and inclusion infection has been found by McKee in Montreal, where women of the poorer classes are often attended by ill-trained midwives.

The clinical signs of inclusion conjunctivitis are as follows:— After infection by a carrier of the virus there is an incubation period of about 8 days, but may be from 3 to 12 days. One eye is usually affected first, the inflammation spreading to the other, though perhaps not for several weeks. The first signs are some tumefaction of the eyelids and conjunctival injection. The conjunctiva becomes oedematous and velvety, and on pulling down the lower lid or everting the upper lid, the dark red conjunctiva is seen to lie in parallel folds, among which are nodular infiltrations which do not rupture on pressure. The inflammation is at its height 4 or 5 days after its commencement. The onset of the disease is usually acute with much discharge; however only slight signs of inflammation may be exhibited; thereby in both respects inclusion conjunctivitis resembles trachoma. There is much photophobia and lacrimation, but little pain. The preauricular gland is often palpable but is not painful.

The inflammation gradually subsides and all discomfort ceases about the twentieth or thirtieth day; nevertheless on everting the lids the mucous membrane of the fornices is seen to be thick and hyperaemic and the nodular infiltrations numerous. It is not until the end of the second month that regression of the signs shows real progress. The nodules may persist for 6 months or even longer but finally disappear without leaving a trace.

Involvement of the cornea by neovascularization, by infiltration or by ulceration does not occur.

The mixed form of ophthalmia neonatorum in which both bacteria and inclusions are found has the same clinical signs as in cases due to bacteria alone or inclusions alone.

The differential diagnosis between inclusion conjunctivitis and trachoma with acute onset cannot be determined during the first week after development of signs of inflammation, for in each case intracellular virus inclusion bodies can be found. After a week or so biomicroscopical examination allows the detection of neovascularization of the upper fifth of the normally clear cornea in

trachoma, a phenomenon absent in inclusion conjunctivitis. Nodular infiltrations, if present in inclusion conjunctivitis, do not rupture on pressure as is the case in trachoma. In both conditions oedema of the superficial epithelium of the upper palpebral conjunctiva is seen with the slit-lamp, and after the condition has persisted for some weeks papillary hypertrophy can be detected.

Diagnosis of inclusion conjunctivitis must be based on the discovery of inclusions within epithelial cells of the conjunctiva together with the presence or absence of pathogenic bacteria. The method of preparing a suitable slide on which to make a smear is as recommended by Coles; a new slide is vigorously rubbed with whiting which is washed off under the tap; it is then rubbed with the cut surface of an uncooked potato and carefully dried with a clean linen handkerchief and kept in spirit until required. The conjunctiva of the everted upper lid is carefully wiped with a pledgelet of cotton wool, and then lightly scraped with a full-bellied scalpel without drawing blood. The epithelial debris thus obtained is spread lightly on the dried slide and fixed for 15 minutes in methyl alcohol before staining with Giemsa. Ten c.c. of recently boiled distilled water, which has been cooled, is measured with a graduated pipette and placed in a Petrie's dish; to this is added 10 drops of Gurr's old Giemsa stain; if the new improved Gurr's Giemsa is employed I use two drops and add two drops of May-Grunwald stain. The fixed film should be placed film downwards, the extremities of the slide resting on two bits of broken glass. After 24 hours the slide is removed and washed in cool, recently boiled distilled water. After drying, examination under the oil-immersion lens of a good microscope may be made. There are other much more rapid methods of staining but I have not found them to be invariably reliable, though often successful.

Elementary bodies are to be found within epithelial cells as pink dots which may be massed together or scattered about the cell; by experts they may be recognized extracellularly. Their size is about 250 mμ. Initial bodies are bluish and larger, about 300 to 800 mμ. The life cycle of the virus is probably about the same as stated by Bedson for psittacosis, 48 hours, initial bodies breaking up into elementary bodies and then initial bodies reappearing (Thygeson). The virus is filterable through an Elford collodion membrane of average pore diameter from 450 to 650 mμ (Tilden and Gifford, Julianelle; Thygeson), and is transmissible to the Sphinx baboon and to Macacus rhesus. On rare occasions only can inclusion bodies be demonstrated in the experimental disease. An attack of the disease confers no immunity and the previous infection of a baboon with trachoma virus does not render the animal resistant to infection with the virus of inclusion conjunctivitis.

Those who have experience in the treatment of ophthalmia neonatorum recommend that all varieties should receive one of the drugs of the sulphonamide group by the mouth. This is the only treatment in use at the Rotunda Hospital, Dublin (Somerville Large), together with frequent cleansing of the eyelids and the instillation of a drop of medicinal paraffin or a drop of oil.

In inclusion conjunctivitis of adults the same treatment may be tried since the application of caustics, such as silver nitrate, is without effect.

Local treatment of the conjunctiva with a sulphonamide derivative has been recommended, but the difficulty is to prepare a solution of the drug of sufficient strength to exert any action and which is not too irritating.

At Sheffield either sulphapyridine (M. & B. 693) or sulphathiazole is used for babies; the dose recommended is 0·125 gramme (¼ tablet) three hourly for the first twenty-four hours, then four hourly for the next twenty-four hours, and finally six-hourly for four days in all. The drug is given crushed in sweetened water and is well tolerated. The response is said to be invariably prompt and satisfactory; in twenty-four hours the oedema of the lids will be much less, and in forty-eight hours the discharge will have almost ceased and the eyes will be open (Clancy).

The treatment of inclusion conjunctivitis in adults, when the disease is in an early, acute stage, will be under hospital conditions and full doses of the particular sulphonamide used may be given with all the care and experience that the exhibition of the drug demands. When the disease has become chronic a dosage of 2 grammes a day for a fortnight or three weeks may be tried while the patient lives at home. It is open to doubt as to whether the blood concentration of the drug is high enough to have any effect on conjunctival organisms with such small doses.

A study of the therapeutic literature of virus diseases reveals the experience of physicians that these diseases are unaffected by drugs of the sulphonamide group. However, it is claimed by some that this is not the case with lymphogranuloma inguinale, trachomatous conjunctivitis and inclusion conjunctivitis, all of which diseases are said to improve under sulphonamide treatment; a claim not universally acknowledged.

The term "sulphonamide" is a generic one and embraces numerous compounds made by different firms of chemical manufacturers. It appears that there is little difference in the effect of these drugs, though the dosage varies. It is said that they do not stimulate leucocytic activity, are not simple germicides, and do not affect the rate of production of specific immunizing bodies, either in quantity or quality. Probably they act by neutralizing a metabolic function or an enzymatic activity. The balance of

evidence indicates that they affect the invading organism in the sense of producing a bacteriostatic action which, in many cases, is not sufficient to effect sterilization without the co-operation of the defensive mechanism of the host (MacCallan).

It is hoped that the above memorandum may be of interest to those ophthalmologists, who, under present conditions, are unable to peruse foreign literature.

A FIRST HUNDRED CASES OF INTRA-CAPSULAR CATARACT EXTRACTIONS

BY

J. B. McAREVEY

DUBLIN

THIS is a report on the results of the first hundred cases on which I attempted to perform cataract extraction by the intra-capsular method. The patients were not selected, they were routine cases, 23 being private and the remainder hospital patients.

Starting off on this method of removing the lens my chief fear was the prospect of having an increased number of vitreous prolapses which must always be considered a major catastrophe, although the immediate results when the lens is gone are less serious.

The minimum age of the 100 cases was 50 years, and the maximum 88 years. Forty-nine were females and 51 males. The number of days in hospital after operation for the 100 cases was 15·3 days. The lens was delivered in its capsule in 67 cases out of the 100; they required 15·6 days in hospital. In 33 patients I was unable to deliver the lens in its capsule. During the expressing of the lens in 21 cases the capsule ruptured, in 4 cases the lens was intumescent and it was not possible to grasp the lens with the forceps. In 8 patients I was not able with reasonable pressure and traction to dislocate the lens, so the intra-capsular method was not persisted with. The number of days in hospital for the 33 extra-capsular extractions was 15·2 days.

The intra-capsular method employed was that of Elschnig in which the lens is "tumbled." In cases where there is a large nucleus if the lens is grasped low down and pressure with the hook is made in the correct position the lens dislocates, but if faulty pressure is made the lens will pass up behind the limbus; this type of lens should be delivered by traction.

Pre-operative slit-lamp examination is essential. The following points I would stress:—

1. Anaesthesia: Absolute lid anaesthesia, in patients over 60 retrobulbar injection caused such a softening of the eye that I stopped using it after the first few cases.

2. Sutures: A superior rectus suture was used in all cases, after the section was made a conjunctival suture was put in. This is helpful but a scleral suture would appear to me more satisfactory as a lot of haemorrhages which occurred and recurred into the anterior chamber were due to the wound opening and the blood leaking in from the conjunctiva.

3. The corneal section was at the beginning made too small, the section should be half the cornea in size and the section should be checked with a spatula, as there is a tendency to have the counter-puncture higher up than the puncture; if this happens the section should be enlarged with scissors.

4. Dilatation of the pupil with homatropine early on the morning of operation. In one case where atropine was used an attack of glaucoma occurred. Where the pupil does not dilate a complete iridectomy is made.

5. A bloodless field is essential, and where haemorrhage has occurred into the anterior chamber the blood should be allowed to clot and then washed out.

The chief causes of ruptured capsules were: 1. Too small a section. 2. Faulty pressure with hook and unnecessary traction with the forceps.

Complications.—Loss of vitreous in three cases; in one of these the vitreous was fluid, this had been anticipated. In a second case vitreous was lost due to trauma with the spatula while replacing the iris. There were 3 cases of post-operative iridocyclitis; two were due to dental sepsis, but the third case occurred after an operation in which there had been a minimum amount of trauma. The iris prolapsed in one case.

After operation eserine is put in and homatropine used the next day unless the pupil is markedly contracted, when atropine is used. In 13 cases haemorrhage occurred into the anterior chamber. Any serious haemorrhage which filled the anterior chamber was in my opinion directly due to trauma.

Visual results:

6/5	7	6/24	1		
6/6	24	4/60	1		
6/9	15	P.L.	2		
6/12	14	Nil	2		
		H.M.	1		
	60		7	67	

The visual results were therefore that 60 cases out of 67 had vision of 6/12 or better. There was in many of the cases some striate keratitis present on discharge from hospital.

Cause of low visual results.—One patient died on the fifth day from a heart attack, another patient had a detached retina and previous to operation had poor projection. A third patient had a severe post operative attack of iridocyclitis causing occlusio pupillae. Two patients with vision of P.L. had gross fundus changes, and one patient with vision of 4/60 left hospital before a post operative haemorrhage had absorbed.

Of the 33 cases in which the lens was not delivered in its capsule, four lenses were intumescent. I was unable to dislocate eight lenses because after the retro-bulbar injection the eye became so soft that I was frightened to use enough pressure with the hook to do this. In 21 cases the capsule ruptured, as a matter of fact some of these ruptured as the lens was presenting through the corneal section and were really intra capsular extractions.

Anxiety to get the lens out quickly, too much traction with the forceps were contributing factors to the rupturing of capsules; any movement with the capsule forceps should be slow and deliberate.

Visual results were:—

6/6	7	6/24	1
6/9	10	6/60	1
6/12	4	4/60	1
6/18	6	P.L.	1
		Nil	2
	27		6 · 33

Complications.—Expulsive haemorrhage in one case; a second eye was lost from panophthalmitis. There were two cases of loss of vitreous. Cortex and capsule remains were the cause of low vision in 9 cases.

Summary.—A first hundred cases of cataract operation are reported in which the intra capsular operation was attempted. The complications and difficulties encountered are discussed.

ANNOTATIONS

The Pan American Congress of Ophthalmology, 1940

It is a matter for regret that, under existing conditions with regard to paper shortage, we are not able to give more than a brief abstract of the material which has been sent to us by Dr. Moacyr E. Alvaro, of Sao Paulo, Brazil.

The Congress was sponsored by the American Academy of Ophthalmology. The chairman was Dr. Harry S. Gradle and the organising secretaries, Dr. Conrad Berens of New York and Dr. Moacyr Alvaro. Papers were read in English, Spanish and Portuguese. The papers were well discussed and the Congress appears to have been a great success. The next meeting has been arranged, circumstances permitting, to be held in Monte Video in 1943.

The following is a list of the papers which were read.

MANUEL URIBE TRONCOSO (New York).—On the value of gonioscopy in the prognosis and treatment of glaucoma.

ALBERT C. SNELL and SCOTT STERLING (Rochester, New York).—A mathematical interpretation of field acuity.

WILLIAM L. BENEDICT (Rochester, Minn.).—Orbital hyperostosis.

J. M. de BARROS (São Paulo).—Ocular leprosy.

A. SOLARES (Sucre, Bolivia).—Kerato-conjunctival lesions prevalent in the high altitudes of Bolivia.

DERRICK T. VAIL (Cincinnati, Ohio).—Hyphaema after cataract operation.

S. HANFORD MCKEE (Montreal).—Observations on the fundus oculi in diabetes mellitus.

A. VASQUEZ-BARRIERE (Montevideo).—Hypertonic rigidity of convergence, or False paralysis of divergence.

TOMAS YANES (Habana, Cuba).—Dacryocysto rhinostomy.

ARTHUR A. BEDELL (Albany, New York).—Unusual lesions illustrated with coloured fundus photographs.

MANUEL MARQUEZ (Madrid).—The best and most exact method of diagnosing small astigmatic errors by means of bicylindrical combinations.

C. DE ANDRADE (Bahia, Brazil).—Interstitial and ulcerative keratitis in Leishmaniasis

JOHN O. MCREYNOLDS (Dallas, Texas).—Complications of cataract removal and measures that may be employed for their relief.

H. FERRER (Cuba).—Intra capsular extraction of cataract with a new vent.

RODMAN IRVINE (Los Angeles).—Further observations on the nature, aetiology and significance of exfoliation of the lens capsule.

A. QUEVEDO (Guatemala).—Ocular filiarosis, ocular symptoms of onchocerciasis.

ALAN C. WOODS and J. S. GUYTON (Baltimore).—Advances in the use of sulphanilamide compounds in ophthalmology.

C. CHARLIN (Santiago, Chilie).—Toxic syndrome of ocular tuberculosis.
SANFORD R. GIFFORD (Chicago).—Further report on tendon transplantation for abducens paralysis.
J. P. GOMES (Sao Paulo).—Tumours of the optic nerve.
DANIEL B. KIRBY (New York).—Congenital bilateral colobomata of the upper and lower eyelids, surgical correction by sliding pedicle flap.
J. L. Pavia (Buenos Aires).—Use of sodium light in fundus examination.
G. G. JAYME (Annapolis, Goyaz, Brazil).—Cephalic tetanus following ocular injury.
C. DE ANDRADE (Brazil).—The conjunctiva as an entrance of infection in Chages' disease (American Typanosomiasis).

Lot 117: A Collection of Spectacles

"If there is any exhibition in all Vanity Fair which satire and sentiment can visit arm in arm together; where you light on the strangest contrasts laughable and tearful: where you may be gentle and pathetic, or savage and cynical with perfect propriety: it is at one of those public assemblies, a crowd of which are advertised every day in the last page of the *Times* newspaper, and over which the late Mr. George Robins used to preside with so much dignity. There are very few London people, as I fancy, who have not attended at these meetings, and all with a taste for moralising must have thought, with a sensation and interest not a little startling and queer, of the day when their turn shall come too, and Mr. Hammerdown will sell by order of Diogenes's assignees, or will be instructed by the executors to offer to public competition, the library, furniture, plate, wardrobe and choice cellar of wines of Epicurus deceased."

These opening words of the seventeenth chapter of *Vanity Fair* always occur to the writer's mind, when, as occasionally happens, he visits a country auction. We do not mean to say that we attend the sales of fat stock, farm implements, etc. But not long ago, happening to see in a catalogue a lot of miscellaneous spectacles, we thought we would have a look at them. The strange contrast in this particular case was that mixed up with a very ordinary lot of fairly modern steel-rimmed spectacles there were numerous examples of the cut-throat type of razor. Any idea that we might perhaps acquire an old pair of Queen Anne silver-rimmed spectacles, shall we say, or even a gross of green spectacles "with silver rims and shagreen cases" was doomed to disappointment. The only item of interest in the whole lot was an old-fashioned spectacle case inlaid with mother of pearl of the type our grandmothers used to put their spectacles in. This particular lot was evidently an accumulation of "junk" acquired over years of dealing in the second-hand antique way and Diogenes, in this instance, had not died but was giving up business.

ABSTRACTS

MISCELLANEOUS

(1) **Schreuder, M. (Leyden).—On anisotropism in the elasticity of corneal tissue. A brief note.** *Ophthalmologica*, Vol. XCIX, p. 490, 1940.

(1) It is known that corneal tissue exhibits optical anisotropism. The long and short axis of the index-ellipses of double refraction lie in the direction of the vertical and of the horizontal meridian respectively. Schreuder tested the elasticity of bovine corneae in these two directions. The resulting data make it highly probable that the cornea is more elastic in the vertical than in the horizontal direction. He holds that this anisotropism of elasticity might help to explain corneal astigmatism in glaucoma.

ARNOLD SORSBY.

(2) **Blumenthal, C. J. (Johannesburg).—A method of treating sepsis after cataract Extraction.** *S. A. Tydskrif, v. Geneeskunde*, May 10, 1941.

(2) **Blumenthal** describes a case of cataract extraction which the day after operation showed signs of acute and severe intra-ocular infection. M. and B. 693, 1 tablet 4-hourly by day, was administered but not tolerated and this treatment had to be abandoned. On the second day after operation the condition of the eye was worse. Under local anaesthesia Blumenthal washed out the anterior chamber with mercurochrome 5 per cent. and glycerine 10 per cent., leaving this solution in the anterior chamber after the hypopyon had been removed.

Next day there was considerable chemosis and the tension became soft. After a few weeks the intra-ocular pressure rose and the eye was treated successfully by short wave diathermy twice daily. Four months after operation projection of light was accurate, tension normal and visual acuity counting fingers. Ultimately the patient recovered vision of 6/6 with glasses after capsulotomy.

H. B. STALLARD.

(3) **Bruce Hamilton J. (Hobart).—Keratitis sicca, including Sjogren's syndrome.** *Trans. Ophthal. Soc. Austral.*, Vol. II, p. 63, 1940.

(3) **Bruce Hamilton** describes one case of congenital keratitis sicca, four cases of Sjogren's syndrome and three of recurrent corneal ulceration with diminished tear secretion. Sjogren's syndrome consists of dry eyes, keratitis, idiopathic swelling of the salivary glands, dry mouth, anhydrosis and articular changes in

females at the menopause. The corneal lesions are of two types: (1) dry, multiple erosions, secondary keratitis, practically painless and continuous; (2) primary keratitis, due to a direct toxic effect on the cornea, and characterized by vesicular and filamentary features. It is intermittent, very painful and often associated with arthritis.

The aetiology of this disorder is obscure. It may be of a chronic inflammatory nature. Bruce Hamilton applied Schirmer's test for lacrimation. A piece of filter paper 25 x 5 mm. is bent 3 mm. from one end and this is placed over the lower punctum. The length of paper saturated with tears at the end of 5 minutes is recorded; 5-10 mm. indicates a dry eye, below 15 is abnormal and 20-25 is considered normal.

Treatment consists in sealing the canaliculi by a diathermy needle and the use of artificial tears, made from autogenous blood serum 10 per cent. in Ringer's solution to which chloretone grs. 1 ad oz. is added. The artificial tears are instilled as drops four-hourly at first and later twice daily. In cases of filamentary keratitis methyl violet 1/2000 and adexolin (B.W. & Co.) three times a day gives comfort.

It seems that corneal vitality and quantitative lacrimation are intimately associated. Bruce Hamilton suggests further research in the progress of the associated arthritis, blood counts, endocrine factors and the possible reduction of lysozyme in idiopathic corneal ulceration.

H. B. STALLARD.

(4) **Pieck, C. F. M. (Leyden).—A so-called myoma of the ciliary body.** *Ophthalmologica*, Vol. XCIX, p. 471, 1940.

(4) **Pieck** gives a description of the clinical and anatomical aspects of a so-called myoma of the ciliary body. The tumour contains various structures, some resembling growth of smooth muscle fibres, others a fibro-sarcoma. It is considered to be either a myoblastoma with embryonic cells or a mixture of myoma and fibrosarcoma.

ARNOLD SORSBY.

(5) **Huysmans, J. (Utrecht).—Exudative central detachment of the retina in a family (Macular Pseudo-cysts).** *Ophthalmologica*, Vol. XCIX, p. 449, 1940.

(5) **Huysmans** recalls the recent literature on pre-retinal oedema (retinitis serosa centralis, flat macular detachment) and describes an interesting family group of eleven persons, eight of whom showed varying degrees of the affection. Functional disturbances were slight and two patients showed iridocyclitis.

ARNOLD SORSBY.

CORRESPONDENCE

THE EDUCATION OF AN OPHTHALMIC SURGEON

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS,—Dr. Gayer Morgan's letter in your last issue and many written and verbally transmitted agreements with my post-graduate lecture on the education of an ophthalmic surgeon have convinced me that I have seemingly not pointed out clearly enough what I wanted to express. No *criticism* of British or any other kind of clinical education was intended. I quoted the British conditions only as best known to the average reader.

My aim was to design an ideal training with ideal selection of the ablest men under ideal social circumstances. That is achieved nowhere, either in this country or in any of the greater continental schools, or even in my democratic homeland. It remains an *ideal* aim. Some spoke or wrote, sometimes enthusiastically, of my polemic treatise. That is a misunderstanding of my intentions. No polemics were in my mind. I fight to make the path of learning for youth as smooth as possible, and consider that the old and experienced should be under an obligation to teach. Everywhere there is still a long way to go to fulfil this ideal.

I am, Yours very sincerely,

ARNOLD LOEWENSTEIN.

GLASGOW,
April 25, 1942.

NIGHT BLINDNESS IN SOLDIERS

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS,—In view of the various investigations into night blindness in soldiers may I be permitted to repeat and amplify a statement of fact.

During the Desert campaign of 1916-18 there were a good many cases. Men complained of tripping over the tent ropes, etc. At first I did not think the complaints genuine but altered my opinion. Whatever doubt may be cast on the theory of causation by vitamin A deficiency, of which at that time nothing was known, I think there is little doubt that there was such a deficiency. Two facts, however, emerged.

1. There was never any ocular disease.
2. Complaints ceased when the troops entered Palestine.

I do not know where vitamin A was obtained in Palestine, though there was an abundance of excellent fruit. In fact one of the most remarkable incidents which came to notice was that a battery was engaged near Jerusalem shelling the Turks and native children were selling fruit to the gunners during the engagement.

I am, Yours truly,

JAMES W. BARRETT.

103-105, COLLINS STREET,
MELBOURNE, C.1
December 29, 1941.

THE DIAGNOSTIC SIGNIFICANCE OF RETRO-BULBAR NEURITIS

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS,—With regard to the letter from your correspondent Allan Briggs, may I say that we must all feel that it is a reproach to our profession that the origin of the four diseases mentioned, *viz.*, retro-bulbar neuritis, rheumatoid arthritis, recurrent iritis and disseminated sclerosis is still so obscure.

We are often obliged, on this account, to stand by helplessly while we watch these miserable conditions go from bad to worse, for want of an efficient remedy.

That there may be a "silent" sinusitis, *i.e.*, without signs or symptoms, as a remote focus of infection, has often been reported, a most striking example being the one reported by me in the February *Brit. Jl. of Ophthal.* this year.

I would like to suggest to Mr. Briggs that, while he is waiting for some new advance of medical knowledge in the future, it would be wise, in the meantime, thoroughly to explore the possibilities of the hidden nasal sepsis to which my paper drew attention.

If he does so, he will find, as I have, that it throws light on scores of otherwise obscure cases.

Yours faithfully,

ROSA FORD.

88, HARLEY STREET, W.1
May 9, 1942.

OBITUARY

HAROLD BARR GRIMSDALE

IT is with very great regret that we record the death of Mr. Harold Grimsdale on May 5. Born in November, 1866, he was a younger son of T. F. Grimsdale, M.D., of Liverpool, who was very well known as an obstetrician in the North of England in the last century. His education was received at Winchester, Caius College, Cambridge, and St. George's Hospital. At school he was in VIth Book under Ridding, who later became Bishop of Southwell, for whom he had a great admiration; he always retained very happy memories of his school life and it was there that he acquired the habit of speaking and writing good English. He shot for the school and was captain of the eight during his last year. He also won the school foils twice and was prominent in the gymnasium, but unlike his elder brother, T. B. Grimsdale, who was in the Uppingham eleven and later played occasionally for Lancashire, he made no mark in cricket. At Cambridge he took up rowing, stroked the Caius boat and took a 2nd class in the Natural Sciences Tripos. At St. George's, he continued to row and was one of the founders and first editors of the Hospital Gazette. Grimsdale took the Cambridge M.B. in 1892 and was house physician at St. George's. Oddly enough he was never house surgeon. The retirement of Brudenell Carter at about this time left Frost single handed in the ophthalmic department and Grimsdale was chosen ophthalmic registrar and at the same time went to Moorfields to work under William Lang, whose chief clinical assistant he became. Like all who worked with Lang he had a profound admiration for his clinical ability. He took the F.R.C.S.Eng. in 1894 and was elected assistant ophthalmic surgeon at St. George's, and towards the end of last century he joined the staff of the Royal Westminster Ophthalmic Hospital. He became a member of the Ophthalmological Society in 1894, served a term on the council and was later vice-president.

Life was a struggle in his early days and he combined his ophthalmic work with the teaching of anatomy. Grimsdale was a remarkably good anatomist and an excellent teacher. His methods were Socratic tinged with sarcasm; for seven years he was responsible for the teaching of a large class in anatomy and his students remained his friends for life.

In 1906 he succeeded to the senior post at St. George's and served his full time becoming consulting ophthalmic surgeon on retirement. He felt his severance with active work at St. George's very keenly.

During all these years he was building up a very large consulting practice. His patients realized that he was thoroughly in earnest and most conscientious in his work and many of them remained his friends through life. He contributed a number of papers and case

reports to current ophthalmic literature and was the author of three books; but always professed that he was not fond of writing. This was a pity, for no one could write better than himself. Early in his career be brought out a small book on refraction; this was followed by a students' handbook of ophthalmic operations, based on the course he gave at the Royal Westminster Ophthalmic Hospital. This last work was later elaborated with the help of Elmore Brewerton into their well known handbook. It has gone into its third edition and maintains its place among the books which an ophthalmic surgeon must have at his command.

Grimsdale was an extremely generous man, no trouble was too great for him to take to help a patient or colleague and only the recipients of his generosity can know what a tremendous amount of work he did for small or no fees. For years he was surgeon to the Royal Normal College for the Blind and to the Artists' Annuity Fund and Governesses Benevolent Institution. He was a member of the Departmental Committee for the Blind in 1917 and was proud of his association with this work.

As a hospital officer Grimsdale was the most regular and punctual in his attendance of anyone the writer ever met. He was hardly ever absent save for occasional minor illnesses and he nearly always did the major share of the work himself. Besides this he taught regularly twice a week at St. George's.

As a surgeon I should say that he tended towards conservatism. He did not rush at new methods of treatment, but if, after due consideration, he thought a method worth trying he gave it a good trial. In his early years he was inclined, I think, towards the French school. His surgical technique was of a very high standard. He was best at cataract extraction. His extractions were models of neatness and the results excellent. His results also were good in glaucoma cases. He was a keen supporter of Lagrange's work on sclerecto-iridectomy and it was some time before he took to trephining. Another subject in which he was much interested was retinal detachment and most of these cases were admitted for igneous puncture. Unfortunately, before Gonin's work, we did not know the importance of sealing the hole and so far as I remember he only had an occasional successful result. Plastic surgery of the eyelids was another field in which he was pre-eminent. Though extremely reserved he had a keen sense of humour and thoroughly enjoyed a joke. He was a good amateur water-colour artist, a gift he inherited from his mother. Besides this he was a facile writer of light verse. Most of these contributions appeared in the hospital gazette and all were unsigned. I remember a very clever skit he did in the style of the Ingoldsby legends.

Towards middle age Grimsdale took up golf. He used to play at Northwood most Sundays. Though never becoming a scratch

player he was deadly accurate and he had, for his opponent, a most annoying habit of holing short shots from the edge of the green. To this journal Grimsdale contributed papers and abstracts of current Italian literature. He also read Spanish.

During the London air raids his house was demolished and we fear that his death must be largely attributed to the effects of the war. What it must have meant to him to lose the records of nearly fifty years of work as well as his furniture and fine collection of china only those who knew him can appreciate.

Mr. Grimsdale married Miss Mabel Todd in 1903. There were no children of the marriage. The ophthalmic fraternity will wish to express their sincere sympathy with his widow in her bereavement.

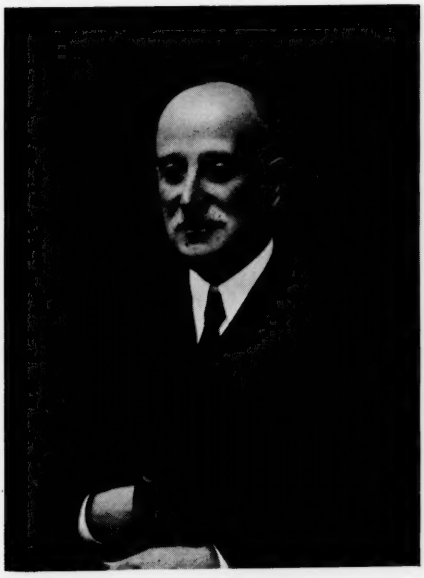
EMIL DE GROSZ

DE GROSZ, who died at Budapest recently at the age of 77 years, was of the third generation of a family of ophthalmologists. His grandfather, a doctor of philosophy of Budapest University and a doctor of medicine of Vienna University, founded and maintained at his own expense an eye hospital in one of the provincial towns of Hungary. He was succeeded there by his son who became chief medical officer of the city, Nagyvarad, now a Rumanian possession. The grandson, Emil de Grosz, is the subject of this notice.

He was one of the best known medical men in Europe. He was a member of the Ophthalmological Society of the United Kingdom, and of the Ophthalmological Societies of Germany, France and Belgium. He was an honorary member of the Ophthalmic Section of the Royal Society of Medicine and of the Ophthalmological Societies of Egypt, Brazil, Spain and Italy. He was also an honorary fellow of the American College of Surgeons and an honorary member of the American Academy of Ophthalmology and Otolaryngology. He was entitled to wear numerous decorations, both national and foreign.

He became professor and director of the No. 1 Ophthalmological Clinic at Budapest in 1905. In 1909 he was chief secretary of the XVI International Medical Congress held at Budapest, when some of us, who had already made his acquaintance, became warmly attached to him. In 1914 he became for a period Dean of the Medical Faculty at Budapest. In 1929 the XIII International Congress of Ophthalmology instituted the International Organization against Trachoma of which de Grosz became the first President; the first meeting of the Organization was held at Geneva in the following year, and subsequently annual meetings were held during his five years' tenure of the office.

During his long professional life de Grosz published many original articles, the most important of which are those on trachoma and on



EMIL DE GROSZ

glaucoma. His numerous visits to London and to other European capitals were for him a pleasure and a relaxation, and during them he made many sincere friends.

His surviving son, Dr. Geza de Takats, whose surname is that of his mother, is a general surgeon at Chicago; there is an important article by him on the surgical approach to hypertension in the Journal of the American Medical Association for February 14, last.

DR. CASEY WOOD

THE death of Casey Albert Wood on January 26, 1942, at the great age of 85 is announced. He was born in Canada in 1856 and took his M.D. from Bishop's College, Montreal, in 1877. In those far off days he was one of Osler's clinical clerks at McGill, and the friendship between them lasted until Osler's death.

Casey Wood started practice in Montreal as a physician, but he was always interested in ophthalmology and in 1886 he left Montreal and spent some years in post graduate work in England and on the Continent. In 1890 he settled in Chicago and rapidly developed a large ophthalmic practice. He was professor of ophthalmology at Northwestern University in 1900, and from 1904-1925 at the University of Illinois. Casey Wood was a prolific author. Besides a great many papers of clinical interest he was an editor of the American Encyclopaedia of Ophthalmology and also of a system of ophthalmic operations. But probably his best known work was done in comparative ophthalmology; the fundus oculi of Birds came out in 1917 and later he issued a large quarto "introduction to the literature of vertebrate zoology," a copy of which, a present from the author, is one of the writer's treasured possessions. He was a generous benefactor to McGill, and the "introduction" referred to above, is practically a list of all the works on this subject there, many of them donated by himself.

After retirement from active practice Casey Wood spent much of his time abroad and worked in Rome at the Vatican Library. His scholarly translation of Benevenutus Grassus on the eye, and the memorandum book of Jesus Hali are well known. His knowledge of the history of ophthalmology was most extensive, while the Blacker Library of Zoology and the Emma Shearer Wood Library of Ornithology at McGill are a lasting memorial of his generosity and ability. His ophthalmological collections also went to McGill Medical Library, and he was the donor of some valuable oriental manuscrips to the Osler Library. McGill gave him the degree of M.D. in 1905 and LL.D. in 1922.

An obituary notice of Casey Wood appeared in the March number of the Canadian Medical Association Journal and to it we are indebted for most of the facts recorded here. At the same time we may state that the writer has been acquainted with Casey Wood for certainly the past 15 years, and has been indebted to him for much friendly correspondence, reprints and books.

NOTES

North of England Ophthalmological Society

AT the Annual Meeting of the North of England Ophthalmological Society held on April 11th, 1942, the following members were elected to the Council:—*President*, Mr. R. W. Greatorex (Halifax); *Vice-President*, Mr. F. Gamm (Huddersfield); *Members of Council*, Mr. T. S. Harrison (Buxton) and Miss E. Hatherley (Sheffield); *Treasurer*, Mr. W. H. Kiep (Bradford); *Secretary*, Mr. Percival J. Hay (Sheffield); *Deputy Secretary*, Mr. W. M. Muirhead (Sheffield).

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Ophthalmological Society of Egypt

The Annual Congress of the Ophthalmological Society of Egypt took place at 42, Kasr el Ainy Street, Cairo, on Friday and Saturday, March 27 and 28, 1942, at 9 a.m. The Symposium was "Syphilis and the Eye."

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Course in Ophthalmology

A basic science training course in ophthalmology is offered by the graduate department of ophthalmology at New York University College of Medicine. Dr. Daniel B. Kirby is the professor of ophthalmology and Dr. Conrad Berens is the director of the course.

Nine months intensive training in ophthalmology is given in preparation for a residency in ophthalmology in an approved hospital. The standards of the American Board of Ophthalmology are used as a guide in outlining the curriculum. New courses instituted during the past year include: pharmacology as a separate course from physiology and therapeutics; syphilis of the eye; medical ophthalmology; retinal physiology. Among the new instructors are Dr. Edward Hartmann and Dr. Wendell Krieg. Application blanks may be secured from the Dean's Office, New York University College of Medicine, 477 First Avenue, New York.

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Special Notice

WE are asked by the Ministry of Information to state that the fact that goods made of raw materials in short supply owing to war conditions are advertised in this journal should not be taken as an indication that they are necessarily available for export.

FUTURE ARRANGEMENTS

1942

July 2, 3, 1942.—Oxford Ophthalmological Congress, at Oxford.